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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/743,543	01/10/2001	Kazunori Ozawa	P/1929 -78	2859

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EXAMINER

LEWIS, MICHAEL A

ART UNIT	PAPER NUMBER
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2655

60

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/743,543

Applicant(s)

OZAWA, KAZUNORI

Examiner

Michael A Lewis

Art Unit

2655

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/23/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1, recites the limitation "said decision circuit" in line 20. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ozawa et al. (U.S. Patent 5778334)

Regarding claim 1, Ozawa et al. disclose a speech coding device:

- a. A "Spectrum Quantization Circuit"(5).
"Spectral parameter quantizer.... that calculates spectral parameters for each subframe...using a quantization codebook" (Col 4, Line 21).
- b. An "Adaptive Codebook Circuit"(10).
"Adaptive codebook...that receives spectrally weighted speech signal ...outputs both the calculated result and an adaptive codebook predictive residual signal" (Col 4, Line 34).
- c. A "Sound Source [*Excitation*] Quantization Circuit"(13).
"excitation [*sound source*] quantizer that selects optimum codevector selects an optimum excitation codebook [*sound source*]" (Col 4, Line 42).
- d. A "Gain Quantization Circuit" (15).
"A gain quantizer that selects an optimum gain codebook Such that error power between said adaptive codebook predictive residual signal and a speech signal synthesized ..." (Col 4, Line 48).
- e. A "Mode Decision [*Classification*] Circuit" (19)

"A mode classification means that ... classifies the speech signal ... as one of a plurality of predetermined speech modes..."(Col 17, Line 27).

f. A "Multiplexer Unit"(17)

"multiplexer means for multiplexing the parameters extracted from the spectral calculator ..." (Col 4, Line 54),

Characterized in that:

When the output from said mode decision [unit] represents a predetermined mode, said sound source signal is represented by a combination of a plurality of pulses wherein an amplitude or polarity of the pulse is calculated from said voice signal (Col 8, Lines 15 – 50 O'252); and said sound source quantization unit selects a shift amount and a code vector, which minimize distortion between an input signal and a reproduced signal, from combinations of a plurality of shift amounts by which the pulses shift and gain code vectors (Col 8, 22 – 34 N'375).

Regarding claim 2, Ozawa et al. show the predetermination of pulses and the shift amounts for shifting the position of the pulses.

"a correction codebook that storesvalues of deviation from true values...wherein the values of the deviation are calculated in advance" (Col 10, Line 15).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 4 & 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa et al. (U.S. Patent 5659661) in view Emori (US5933802), in view of Funaki (US 5682407) and further in view of Ozawa (US 5826226).

Regarding claims 4 & 5, Ozawa et al. disclose a speech decoding device:

a. A "Demultiplexer"(100)

"A demultiplexer for receiving and separating an index concerning spectrum parameter, an index concerning amplitude.... concerning excitation signal" (Col 7, Line 5)

b. A "synthesis Filter"(140)

"A synthesis filter unit for restoring...obtaining a synthesized signal ... " (Col 7, Line 27)

c. An Adaptive codebook (110)

"An adder coupled to the adaptive codebook unit and the excitation codebook unit...and to output a drive signal as a result" (Col 7, Lines 15 – 26, Col 7, Line 5), see Figure 1.

Ozawa ('661) disclose a demultiplexer that generates an excitation [*claimed sound source*] codebook from a gain codebook (Col 1, Eqn. 2) which is added to an adaptive code vector and utilizes a shift amount of a pulse position (Col 3, Lines 1 – 5). [*Ozawa et al. describe the various indices that are used including the pitch that inherently shows the shift amount*].

Ozawa et al. ('661) do not explicitly disclose a sound source signal generation unit for generating a sound source signal from an adaptive code vector and a gain code vector. However, Emori teaches a sound source decoder that is combined with an adaptive codebook decoder (Fig 2(22,23,42)). The sound source decoder receives the mode information and the source code to decode and reproduce the sound information with reference to a sound source codebook.

Therefore, it would have been obvious for one of ordinary skill at the time of invention to modify Ozawa et al. by adding a sound source decoder as taught by Emori in order to achieve the most efficient method of reproducing natural sounding speech.

The combination of Ozawa ('661) and Emori do not disclose a gain code vector. However, Funaki teaches a gain calculating circuit with an excitation codebook and adaptive codebook that are combined together by a series of multiplication and addition procedures (Fig 7(22,23 & 24)). The gain decoding unit is necessary to decode the gain in the speech signal to produce natural sounding speech.

Therefore, it would have been obvious for one of ordinary skill at the time of invention to modify Ozawa et al. by adding gain decoding unit as taught by Funaki in order to reproduce a natural sounding speech.

The combination of et Ozawa ('661), Emori and Funaki do not address the language "predetermined / specific" mode in relation to a gain codebook. However, Ozawa ('226) teach the use of a "predetermined / specific" mode in relation to a gain codebook(Col 3, Lines 40 – 62). *[Ozawa describes a mode discrimination circuit where the term specific mode is defined a position of at least one of the pulses which is represented by a number of bits determined in*

advance and amplitudes of the plurality of pulses are quantized simultaneously.

A predetermined mode describes a frame with the amplitude patterns representative of the amplitudes of a plurality of pulses for bits that are prepared as an amplitude codebook in advance, and an optimum amplitude pattern is selected from among the amplitude patterns].

Therefore, it would have been obvious for one of ordinary skill at the time of invention to modify Ozawa et al. by adding terminology related to “predetermined/specific” mode in relation to a gain codebook as taught by Ozawa(‘226) since the mode information is necessary for the decoder to reproduce natural sounding speech.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa et al. (U.S. Patent 5778334) in view of Takahashi et al. (U.S. Patent 672459).

Regarding claim 3, Ozawa et al. do not teach the use of a random generator for generating random pulses. However, Takahashi et al. teach,

“...random signal generator for generating a random means and a non-voice sound source predicting part” (Col 4 , Line37).

A key objective of any voice coder is to provide a voice signal coding apparatus capable of reproducing a natural sound for signals in non-voice periods.

Therefore, it would have been obvious for one of ordinary skill at the time of invention to modify Ozawa et al. by adding a random generator as a source of generating pulses as taught by Takahashi et al. in order to achieve the most efficient method of coding of natural sounding unvoiced frames.

Response to Arguments

5. Applicant's arguments with respect to claims 1 - 5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A Lewis whose telephone number is 703 305-8730. The examiner can normally be reached on Monday through Friday, 8:30 am – 5 pm.

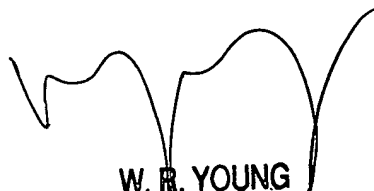
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (703)305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lewis A Michael
Examiner
Art Unit 2655

Mal

5/31/2004



W. R. YOUNG
PRIMARY EXAMINER